

WHAT IS CLAIMED IS:

1. An intraluminal stent device, comprising:

two or more elements aligned to form adjacent elements, each element having a similar pattern of undulations forming peaks and valleys, said pattern being formed from a repeating series including

a long segment connecting with a first peak turn, said first peak turn connecting with a first midsized segment, said first midsized segment connecting with a first valley turn, said first valley turn connecting with a short segment, said short segment connecting with a second peak turn, said second peak turn connecting with a second midsized segment, said second midsized segment connecting with a second valley turn, said second valley turn connecting with a long segment of a similar adjacent series,

wherein said elements are connected directly to adjacent said elements.

2. The intraluminal stent device of claim 1, wherein either at least one first peak turn of a first element is connected to a first valley turn of an adjacent second element or at least one second peak turn of a first element is connected to a second valley turn of an adjacent second element.

3. The intraluminal stent device of claim 2, wherein all but the first and last elements have a first and a second connection point with an adjacent element, said first connection point being from a first peak turn to a first valley

turn and wherein said second connection point is a second peak turn to a second valley turn.

4. The intraluminal stent device of claim 3, wherein said first and second connection points between a first element and a second element are circumferentially displaced from said first and second connection points between said second element and a third element, such that subsequent first and second connection points form a longitudinal double helix pattern.

5. The intraluminal stent device of claim 1, wherein said adjacent elements are connected by welding.

6. The intraluminal stent device of claim 1, wherein said adjacent elements are formed connected.

7. The intraluminal stent device of claim 1, wherein said elements are formed from a toroid.

8. The intraluminal stent device of claim 1, wherein said first valley turn and said second peak turn have a larger turn radius than that of said first peak turn and said second valley turn.

9. The intraluminal stent device of claim 1, wherein said two or more elements are placed onto a balloon of a balloon catheter for expansion within a body lumen.

10. An intraluminal stent device, comprising:  
two or more elements, each element having undulations forming peaks and valleys formed from a repeating series including a long segment, a first midsized segment, a short segment, and a second midsized segment, each connected by hairpin turns,

wherein said elements are connected directly to adjacent said elements.

11. The intraluminal stent device of claim 10, wherein adjacent elements are connected by welding.

12. The intraluminal stent device of claim 10, wherein adjacent elements are formed connected.

13. The intraluminal stent device of claim 10, wherein said elements are formed from a toroid.

14. The intraluminal stent device of claim 10, wherein said hairpin turns between said first midsized segment and said short segment has a larger turn radius than between said long segment and said first midsized segment.

15. The intraluminal stent device of claim 10, wherein said hairpin turns between said short segment and said second midsized segment has a larger turn radius than said hairpin turn between said long segment and said first midsized segment.

16. The intraluminal stent device of claim 10, wherein said elements are directly connected to adjacent said element at the hairpin turns.

17. The intraluminal stent device of claim 16, wherein said hairpin turns are welded together.

18. The intraluminal stent device of claim 16, wherein said hairpin turns are soldered together.

19. An intraluminal stent device, comprising:  
two or more elements, each element having undulations forming peaks and valleys formed from a repeating series including a long segment, a first midsized segment, a short segment, and a second midsized segment, said elements are aligned longitudinally such that said long segments of a first element abut said short segments of a second adjacent element, forming an area where said long segments of said first and second adjacent elements overlap,

wherein a connecting member spans between one of said long segments of said first element and one of said long segments of said second adjacent element in a radial direction.

20. The intraluminal stent device of claim 19, wherein said connecting member is sinusoidal shaped.
21. The intraluminal stent device of claim 19, wherein said connecting member is connected to said first and said second adjacent elements by welding.
22. The intraluminal stent device of claim 19, wherein said connecting member is formed connected to said first and said second adjacent elements in a unitary structure.